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ABSTRACT

This paper presents an empirical positivist approach to an educational research problem: what factors influence the educational achievement of Maltese-Australian children in Melbourne Schools? The research tested the hypothesis that Maltese-Australian students were more field dependent than Anglo-Celtic Australians and what the role of cognitive style, as a predictor variable, had on educational achievement. The study group consisted of 97 10th year students (51 Maltese-Australians and 46 Anglo-Celtic Australians. The group was given two questionnaires to complete and six tests were administered to them over two half days. The test scores were analyzed using tests, ANOVA, and regression analysis. No significant difference was found between the two ethnic groups in their cognitive style; however, Maltese-Australian females were found to be significantly more field dependent than their male counterparts whose scores were similar to their Anglo-Celtic peers. Cognitive style did not appear as a major predictor variable in accounting for the variance of test scores in any of the groups, while reading and intellectual ability seemed more influential. The research identified differences in the nature of influences explaining the scholastic performance of the students and highlighted the need to be aware of the interaction between sex and cultural background when considering minority group response to mainstream culture. (CG)

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APPLYING EMPIRICAL METHODS IN COMPARATIVE EDUCATION: AN EXAMPLE

by

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Paper presented at the Annual Conference of the Australian Comparative and International Education Society (11th, Hamilton, New Zealand, 21-24 August, 1983).

APPLYING EMPIRICAL METHODS IN COMPARATIVE RESEARCH: AN EXAMPLE

EMMANUEL GAUCI

Empirical positivist methodology has had wide credence and application in Australian educational research. It could be argued that this search for 'hard data' owes its origins to the impact of the scientific method on psychology, illustrated by the work of Fisher[1] and Thorndike.[2] This tradition has been transmitted and legitimated in Australia through such institutions as the Australian Council for Educational Research and supported by a network of practitioners in Australia's institutes of tertiary education. However, as Simkin[3] noted two years ago, Australian comparativists generally have avoided using positivist approaches to test or to build theories of educational change.

The purpose of this paper is to report on one piece of research which sought to apply the empirical positivist approach in order to identify causal relationships between culture and educational achievement, and in so doing attempt to tease out the factors which influence the achievements of Australian children from minority backgrounds. The paper is divided into four sections: a description of the problem and its theoretical dimensions; a description of the methodology, its utility and limitations; a report of the research and its findings; discussion of the value of the approach as used.

The argument put forward, as a result of this examination, is that empirical approaches to comparative educational research do have their place. Keeping in mind the underlying assumptions and limitations of the method, it is possible to use empirical methodology not only to test models and theoretical constructs but also to identify alternative causal relationships.

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THE PROBLEM

The research sought to identify factors influencing the educational achievement of Maltese-Australian students in Melbourne schools. It was an attempt to clarify the role that one's cultural background may have in contributing to success at school. There were three broad theoretical issues underlying the research: the causes of educational

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disadvantage, the nature of cultural transmission in the classroom, and the nature of minority-majority group relations.

The debate on educational disadvantage is broad and covers a wide range of possible causal factors. It could be suggested, for example, that Maltese-Australian students are disadvantaged because they are immigrants or the children of immigrants, and as such do not possess the English language skills or value systems necessary to succeed at school. Martin,[4] Keats and Keats,[5] Johnson,[6] De Lemos,[7] Evans and Poole,[8] and Rosenthal and Morrison,[9] for example, examine the role that knowledge of the English language has on the achievement of children from non-English speaking backgrounds. Research by Martin and Meade,[10] Marjoribanks,[11] and Browning[12] indicates that immigrant parents have different expectations of schooling and different value orientations which influence the scholastic achievement of their children.

On the other hand, some commentators, such as Eipper[13], argue that social class not ethnicity is the critical factor in this situation. Educationalists, such as Bernstein,[14] Deutsch,[15] and Toomey[16] argue that lower class families do not provide their children with the socio-cultural experience, perspective or structures necessary to ensure scholastic attainment. Majoribanks suggests that lower class immigrant families belong to powerless social groups because they are not in a position to pass onto their children the cultural capital related to achievement.

Finally, it could be argued that immigrant school children are disadvantaged because they participate in a school system which is an alienating experience, designed primarily to label and to select only the 'bright' students (see for example, Knight[17] and Meade[18]).

However, as Australia has a multicultural population, it could be suggested that educational achievement is indicative of successful cultural transmission. Hansen,[19] Bourdieu[20] and Kimball[21] argue that the school is the formal mechanism through which a set of knowledge, values, skills and behaviour patterns are given meaning, legitimacy and validity. Furthermore, if one accepts the argument put forward by Berger and Luckmann[22] that knowledge is a socially constructed and distributed set of perceptions, information and values, then it seems

reasonable to propose that within a multicultural society such as ours there exists differing perceptions of reality and of knowledge. Consequently, it could be argued that children from minority groups, such as the Maltese, fail at school because they do not share the same set of criteria which determine the selection and legitimation of knowledge.

The possibility of cultural impact on knowledge and behaviour has been suggested by recent research by Dunkin and Doenau[23] who found that classroom behaviour and interaction was influenced by cultural values.

Underlying both these debates is the central issue of social power, that is, the nature of relationships between a majority, powerful, superordinate group with minority, powerless, subordinate groups. As low income earners, are immigrants to be classified as members of a working class and so tied into a class-based relationship? Or do members of ethnic communities relate to a dominant majority on terms determined by cultural parameters such as the desire to retain and perpetuate important aspects of their culture, for example language and religion, through structural or personal arrangements? Schemerhorn,[24] for example, argues that the nature of the integration of an ethnic group into a community is dependent upon the interaction of competing centrifugal and centripetal forces, and the response of the majroity group to these pressures.

Hence, in an attempt to identify causal relationships between cultural background and scholastic acheivement, the research had to answer questions related to the nature of minority-majority social group relationships; how such social relations impinged upon the education of children from minority ethnic groups, and to what extent did differing cultural backgrounds influence the perception and definition of knowledge, and in so doing have an effect on the educational achievement of these children?

THE METHOD

The attitude adopted in this research was that understanding the implications of the findings of positivist methodologies required a knowledge of the sociocultural reality within which that data was

located. Consequently, apart from asking students to complete tests in order to collect the 'hard data', background information about the sociocultural environment of the Maltese was also collected. This background information, based on interviews, published material, documentary evidence from schools and my own knowledge of the community, was interpreted in order to obtain an image of traditional Maltese culture, the workings of the community in Melbourne, the position of Maltese students and parents in schools, their attitudes and expectations of schooling and education, and the attitudes of school systems to the Maltese.

Underlying this approach were a number of assumptions about the utility and capability of the method employed:

1. Positivist methodology, that is, the establishment and verification of educational situations through the testing of specific hypotheses, was a relevant and appropriate tool;
2. Comparison of the test scores and in particular the results of the statistical analyses comparing the scores of differences sexes and different ethnic groups would assist our understanding of the processes associated with the achievement of educational outcomes among children from minority ethnic groups;
3. Concepts such as 'educational achievement', 'ethnicity' and 'intellectual ability' could be measured, that is, defined in such a manner as to allow these variables to operate within a positivist framework;
4. The nature of a group's perception of knowledge would be reflected in scores on two sets of psychological tests: a test of cognitive style and standardised tests of intelligence;
5. Causal relationships can be identified and examined through the application of inferential statistical techniques such as regression analysis;
6. Minority-majority social group relations would be reflected in the degree of similarity in the students' achievement scores, cognitive style and the patterns of relationships between educational outcome and predictor variables.

A total of ninety-seven students participated in the research. The students were in Year 10 and attended five post-primary schools

located within a municipality in the western suburbs of Melbourne. That local government area was selected as it contained over one-quarter of the total Maltese community living in Melbourne. It should be noted that over half of Melbourne's Maltese community live in the western suburbs. Hence, the Maltese-Australian sample that was selected was thought to be reasonably representative of the Maltese community in Melbourne. All the students had undertaken their entire schooling in Australia. All but three were Australian-born.

Fifty-one Maltese Australians (25 male and 26 females) and forty-six Anglo-Celtic Australians (24 male and 22 female) were asked to complete two questionnaires and were given six tests over a period of two half days:

- a Group Embedded Figures Test designed by Witkin and associates to measure one's cognitive style, that is, the degree of field dependence or independence possessed by the student;
- two standardised intelligence measures: the nonverbal Raven's Matrices test and the verbal ACER Higher M Test;
- an Australian adaptation of the Cooperative Reading Comprehension test to measure reading ability in the English language;
- two cognitive skills tests based on ACER Item Banks which were trialled and validated in western suburban schools with large numbers of Maltese and non-Maltese students. The tests were in Social Science and in Mathematics/Science.

Students' test scores were analysed by the use of t tests, ANOVA and regression analysis. T tests for independent means and analysis of variance were used where indications were sought of the significance of the differences in the mean scores of identifiable groups of students. The use of these methods was limited however for two reasons. Firstly, two assumptions underlying these techniques, namely the normal distribution of students in each ethnic group and the equality of variance in both groups were not met in this research. Secondly, although techniques such as ANOVA are robust with respect to violation of these to assumptions, this is only the case where there are equal numbers in each sample.[25] As this did not occur in this research care was taken in applying and interpreting the results.

Multiple regression analysis was the major statistical technique used to anlayse the test results because it was able to identify factors associated with school achievement and to describe the pattern of relationships among the predictor variables. Multiple regression analysis seeks to determine what weighted combination of independent variables will provide the best prediction of a dependent variable. Consequently, as a descriptive method it is capable of expressing the proportion of variance accounted for by these independent variables. Each variable contributes its own unique influence and also a joint influence with other variables in the equation. It is possible to compare the size of these contributions by comparing the standardised beta weights and by comparing changes in the coefficient of determination, R^2. This coefficient expresses the proportion of Y accounted for by the independent variable or variables. Thus, it was possible to identify the nature of the influences on students' achievements and to compare the way in which these factors operated.

Clearly, the method used to collect and analyse the data had a number of advantages and limitations. On thepositive side it was a means of obtaining information about the level of scholastic achievement of students of Maltese background. This role was important because little has been written about this ethnic group and what is known has generally been judgements based on teacher impressions and prejudices. Secondly, the analysis identified influenctial variables and described their effect on achievement. In so doing, our understanding of the processes associated with school achievement was refined as the complexity of the situation was made apparent. Finally, the use of empirical data allowed comparisons to be made of the processes influencing Maltese-Australian students with those affecting their peers in the majority culture, thereby increasing our appreciation of the cultural influences on learning.

On the other hand, the application of empirical research has its own limitations which must be recognised. The collection of data through the application of standardised tests can be described as artificial both in the manner with which the data was collected and in the relevance of the tasks required to be completed. To some extent the latter point was acknowledged by my efforts to produce two measures of

educational outcome using criterion-based reference tests designed in co-operation with the relevant subject teachers. The potentially irrelevant content of the intelligence measures was accepted on the basis that such tests defined and organised knowledge in a culturally specific manner, and the skills they sought to measure as reflective of intelligence were chosen by culturally determined criteria. Thus it was expected that these tests would be useful measures with which to highlight cultural differences in the perception of knowledge. Secondly, the application of various statistical techniques assumed that the relationship between the variables was linear and that they acted independently of each other. However, this mathematical principle may not necessarily be an accurate description of the situation. Non-linear relationships do occur and need to be examined and recognised (once our techniques increase in sophistication). Hence, one needs to be aware of the perception of reality which empirical methodologies impose upon the data if such approaches to research are to be used effectively.

FINDINGS OF THE RESEARCH

The research sought to test two hypotheses. Firstly, it was proposed that Maltese-Australian students were more field dependent than Anglo-Celtic Australians. This hypothesis was based on the theory, supported by reserach undertaken overseas,[26] that individuals who live in closely knit family structures and in communities which stress social conformity were more likely to be field dependent than those who live in a more open, less structured society. Secondly, an examination was made of the role which cognitive style, as a predictor variable, had on educational achievement. American Researchers[27] argue that current educational practices require field independent modes of thinking because they stress analytic, independent problem-solving techniques and strategies in which field dependent students are less skilled.

The data indicated that there was no significant difference between ethnic groups in terms of their cognitive style (Table 1). However, analysing the GEFT scores to compare differences between the sexes (Tables 2 and 3) indicated that Maltese-Australian families were signficantly more field dependent than Maltese Australian males, whose GEFT score was more similar to that of their Anglo-Celtic peers.

Table 1: Two-way ANOVA Table of GEFT by Ethnicity and Sex

Source of Variation	Sum of Squares	df	Mean Square	F	P
Main effects:					
Ethnicity	54.42	1	54.44	2.00	n.s.
Sex	202.77	1	202.77	7.44	0.05
Interaction	19.85	1	19.85	0.73	n.s.
Residual	2535.40	93	27.26		
Total	2819.32	96			

Table 2: Mean and standard deviation scores of male and female Maltese-Australian students on GEFT scores

	Male Students	Female Students
Mean	12.56	8.81
S.D.	4.95	5.64
Number	25	26
t value	-2.53	

Table 3: Mean and standard deviation scores of male and female Anglo-Celtic Australian students on GEFT scores

	Male Students	Female Students
Mean	13.17	11.23
S.D.	4.46	5.68
Number	22	24
t value	-1.27	

This pattern was duplicated in the scores on the two standardised intelligence measures. As stated earlier, these tests can also be perceived as measures of the degree to which Maltese-Australian students organise knowledge and execute cognitive tasks in a manner similar to that used and accepted as the 'norm' by members of highly industrialised, technological advanced Western societies.[28] The mean scores of Maltese-Australians on these tests were significantly lower than those of their Anglo-Celtic counterparts (Table 4), with the scores of Maltese-Australian females significantly lower than those of Maltese-Australian males, a pattern not replicated among the Anglo-Celtic Australian population. (Tables 5 and 6).

Table 4: T-test values between Maltese-Australian and Anglo-Celtic Australian populations, in relation to scores on intellectual ability measures.

Measurement		Maltese-Australian	Anglo-Celtic Australian	T-Value
Matrices	$\bar{X}$	108.47	114.30	-2.37*
	S.D.	13.39	10.79	
ACER Higher Test	$\bar{X}$	99.14	106.65	-2.88*
	S.D.	12.65	13.02	
Higher Test Subtest L	$\bar{X}$	95.63	104.07	-3.56*
	S.D.	11.15	12.10	
Higher Test Subtest Q	$\bar{X}$	103.90	107.51	-1.30
	S.D.	14.08	13.27	

Table 5: T-test values between Maltese-Australian females and male samples, in relation to scores on intellectual ability measures.

Measurement		Female	Male	T-value
Matrices	$\bar{X}$	104.89	112.20	2.03*
	S.D.	15.60	9.56	
ACER Higher Test	$\bar{X}$	95.08	103.40	2.47*
	S.D.	10.65	12.34	
Higher Test Subtest L	$\bar{X}$	92.77	98.6	1.91*
	S.D.	9.64	12.01	
Higher Test Subtest Q	$\bar{X}$	100.73	107.20	1.67*
	S.D.	15.55	13.04	

Table 6: T-test values between Anglo-Celtic Australian females and males in relation to scores on the intellectual ability measures.

Measurement		Female	Male	T-value
Matrices	$\bar{X}$	115.50	113.21	0.71
	S.D.	11.61	10.11	
ACER Higher Test	$\bar{X}$	104.68	108.46	0.98
	S.D.	13.31	12.79	
Higher test subtest L	$\bar{X}$	102.73	105.29	0.71
	S.D.	12.07	12.25	
Higher test subtest Q	$\bar{X}$	106.18	108.71	0.64
	S.D.	13.54	13.18	

Examining the regression analyses of the students' scores also highlights a number of interesting patterns. Cognitive style did not appear as a major predictor variable in accounting for the variance in the scores of any of the groups on the three academic tests. As reported in Table 7, GEFT generally made a very small, independent contribution, its largest being 3 per cent for the social science skills scores of Anglo-Celtic Australian students. In comparison, reading and intellectual ability seemed to be more influential.

Table 7: Results of regression analyses for Anglo-Celtic Australian and for Maltese-Australian samples, with performance on all three academic tests as the outcome

Outcome	Reading comprehension		
	Variable	Beta	R^2
ANGLO-CELTIC AUSTRALIAN	Intel	0.81	0.55
	Sex	0.17	0.56
	GEFT	-0.12	0.58
	School	-0.09	0.58
MALTESE-AUSTRALIAN	Intel	0.62	0.43
	Sex	0.12	0.43
	School	-0.09	0.44
	GEFT	0.02	0.44
Outcome	Mathematics/science skills		
	Variable	Beta	R^2
ANGLO-CELTIC AUSTRALIAN	Intel	0.60	0.58
	Reading	0.15	0.59
	School	-0.07	0.59
	GEFT	0.06	0.59
	Sex	-0.04	0.59
MALTESE-AUSTRALIAN	Intel	0.32	0.25
	School	0.24	0.28
	Reading	0.22	0.31
	Sex	-0.10	0.31
	GEFT	0.03	0.31
Outcome	Social Science skills		
	Variable	Beta	R^2
ANGLO-CELTIC AUSTRALIAN	Reading	0.66	0.60
	GEFT	0.22	0.63
	Sex	-0.17	0.66
	School	-0.05	0.66
	Intel	0.03	0.66
MALTESE-AUSTRALIAN	Intel	0.69	0.63
	Reading	0.31	0.67
	Sex	-0.19	0.70
	GEFT	-0.07	0.71
	School	-0.03	0.71

Secondly, while Maltese-Australian students performed less well on all the academic tests than their Anglo-Celtic Australian peers, the pattern and nature of influences on these scores varied, more so within the Maltese sample than within the Anglo-Celtic sample or between ethnic groups. The regression analyses indicate that the nature of the relationships between the independent variables and the size of their contribution to the variance in students' achievement were similar between Maltese-Australian males and the Anglo-Celtic Australian group.

Examining the variance in reading ability (Tables 8 and 9), for example, over half of the variance in students' scores was accounted for by the combination of factors, intellectual ability, cognitive style and school, with the most important variable being intellectual ability (as indicated by the large size of its beta weight and the value of its R^2). However, these same factors only contributed 35 per cent to explaining the variance in the reading scores of Maltese-Australian females.

Table 8: Results of regression analyses for Maltese-Australian male and female samples, with performance in reading comprehension as the outcomes.

Outcome	Reading comprehension		
	Variable	Beta	R^2
MALES	Intel	0.64	0.51
	GEFT	0.19	0.54
	School	-0.05	0.55
FEMALES	Intel	0.59	0.32
	School	0.17	0.34
	GEFT	-0.06	0.35

Table 9: Results of regression analyses for Anglo-Celtic Australian male and female samples, with performance in reading comprehension as the outcomes.

Outcome	Reading comprehension		
	Variable	Beta	R^2
MALES	Intel	0.87	0.55
	GEFT	-0.27	0.58
	School	-0.16	0.61
FEMALES	Intel	0.77	0.59
	GEFT	-0.07	0.59
	School	0.04	0.59

A different pattern emerged with reference to accounting for the variance in students' mathematics/science skills scores. The combination of predictor variables - intellectual ability, reading, GEFT and school - accounted for 77 per cent of the variance in the scores of Anglo-Celtic males, nearly 50 per cent for Anglo-Celtic females and Malese-Australian males, and only 20 per cent for Maltese-Australian females (see Tables 10 and 11). Identifying the relative importance of intellectual and reading abilities, it appears that intellectual ability is a major predictor for Anglo-Celtic Australian males, and in combination with reading ability, a major predictor for Anglo-Celtic Australian males and females, and Maltese-Australian males (Tables 12 and 13).

Table 10: Results of regression analyses for Maltese-Australian male and female sample, with performance in the cognitive skills tests as outcomes.

OUTCOME	Mathematics/science skills		
	Variable	Beta	R^2
MALES	Reading	0.39	0.37
	School	0.25	0.44
	GEFT	0.20	0.48
	Intel	0.17	0.49
FEMALES	Intel	0.49	0.19
	GEFT	0.08	0.20
	School	0.07	0.20
	Social Science skills		
	Variable	Beta	R^2
MALES	Intel	0.53	0.71
	Reading	0.41	0.79
	School	0.10	0.80
	GEFT	0.01	0.80
FEMALES	Intel	0.74	0.63
	Reading	0.23	0.67
	GEFT	0.11	0.67
	School	0.04	0.68

Table 11: Results of regression analyses for Anglo-Celtic Australian male and female samples, with performance on the cognitive skills tests as outcomes.

OUTCOME	Mathematics/science skills		
	Variable	Beta	R^2
MALES	Intel	0.69	0.74
	GEFT	0.17	0.76
	School	-0.10	0.77
	Reading	0.04	0.77
FEMALES	Intel	0.58	0.42
	Reading	0.34	0.46
	GEFT	-0.28	0.47
	School	0.19	0.49
	Social Science skills		
	Variable	Beta	R^2
MALES	Intel	0.69	0.55
	GEFT	0.42	0.66
	School	-0.10	0.67
	Reading	0.09	0.67
FEMALES	Intel	0.82	0.75
	School	-0.08	0.76
	GEFT	-0.05	0.76
	Intel	0.02	0.76

Table 12: Unique and shared contribution of intelligence and reading to the proportion of variance accounted for in the cognitive skills scores of male and female Anglo-Celtic Australian students.

	Mathematics/science Skills Achievement			Social Science Skills Achievement		
Sex	Variable	Percentage Contribution		Variable	Percentage Contribution	
		Unique	Shared		Unique	Shared
MALE	Intelligence	33	41	Intelligence	0	45
	Reading	3*		Reading	10	
FEMALE	Intelligence	6	36	Intelligence	0	48
	Reading	4		Reading	29	

* Contribution shared with other variables

Table 13: Unique and shared contribution of intelligence and reading to the proportion of variance accounted for in the cognitive skills socres of male and female Maltese-Australian students.

	Mathematics/science Skills Achievement			Social Science Skills Achievement		
Sex	Variable	Percentage Contribution		Variable	Percentage Contribution	
		Unique	Shared		Unique	Shared
MALE	Intelligence	1*	30	Intelligence	13	58
	Reading	6		Reading	8	
FEMALE	Intelligence	14	1	Intelligence	29	33
	Reading	5*		Reading	4	

* Contribution shared with other variables

As reported in Tables 10 and 11, the combination of intellectual ability, cognitive style, reading ability and school accounted for more of the variance in the social science skills scores of Maltese-Australian males (80 per cent) and Anglo-Celtic Australian females (76 per cent) than for Maltese-Australian females (68 per cent) and Anglo-Celtic Australian males (67 per cent). However, comparing the relative importance of intellectual and reading abilities, the shared contribution of these two variables was the most important predictor, with the uniuqe contribution of reading ability the next major influence on the scores of Anglo-Celtic Australian while that of intellectual ability was the next important predictor among the Maltese-Australians (Tables 12 and 13).

Thus, the research identified not only differences in academic achievement and in cognitive style, but also differences in the nature of influences which explain the scholastic performance of Maltese-Australian and Anglo-Celtic Australian students. Furthermore, the research indicated that unlike the Anglo-Celtic Australian sample, there were distinct differences among the Maltese-Australian sample students, with males in that group sharing more characteristics with their Anglo-Celtic peers than did the Maltese-Australian females.

These differences within the Maltese-Australian sample raises important questions about the manner with which minority-majority social group relations may impinge upon members of a minority group. Combining the empirical data outlined above with sociological and anthropological knowledge about traditional Maltese culture, its patterns of socialisation and identification of sex roles, and about the nature of Maltese settlement in this part of Melbourne (where due to the concentration of Maltese families living in this suburb, a strong measure of communal support has been obtained for the maintenance of traditional values), it has been possible to postulate that Maltese-Australian males and females inhabit slightly but significantly different environments where the values, behaviour and skills which are promoted in that environment result in varying degrees of acquisition of mainstream Australian culture. The cultural mores and expectations placed upon males are such that they encourage an outward socialising experience with other males - a situation which enables them to acquire the language, cognitive skills,

cognitive approaches and style, necessary to achieve at school. On the other hand the demands of Maltese culture on females restrict their movement to the home, thereby limiting their access to mainstream language and culture, and probably ensuring a perpetuation of traditional Maltese perspectives which are not catered for by Australian schools.

CONCLUSION: THE UTILITY OF EMPIRICAL METHODOLOGY

In the research reported above the application of empirical positive methodology proved to be valuable. Information was obtained about the cognitive style and educational achievement of students from minority and majority social groups. The statistical analysis provided indications of causal relationships, for specific groups, between a number of predictor variables and scholastic success. These findings have been the basis for productive comparisons to be made with the findings of other research, and in so doing, assist in the process of developing appropriate models.

The findings of the research indicated that Maltese-Australian students, like other students from minority ethnic backgrounds, did not perform as well as Anglo-Australian students.[29] More importantly, the research indentified different responses between Maltese-Australian males and females. This differentiation is an important finding as it suggests a need to be aware of the interaction between sex and cultural background when considering the response of members of minority groups to mainstream culture.

In the past, Australian research has tended to identify members of minority groups either as migrants, for example Evans and Poole,[30] or as members of specific ethnic groups, as do Martin and Meade.[31] The research reported here seeks to refine our understanding of the processes involved by considering the interaction of sex and culture - a process which has been given attention recently by the research of Dunkin and Doneau[32] who found that the way in which migrant children responded to the classroom situation depended upon the interaction of sex and culture and the manner in which that interaction impinged on their personality and behaviour.

There is a growing trend in research on aspects of multicultural education for users of comparative, positivist methodologies to identify more specifically the characteristics of their sample and the hypothetical relationships they propose to test. Recent research such as Moore and Rosenthal[33] have sought to identify interactions between sex and ethnicity on self-image. Majoribanks[34] also refined his sample in a recent study on ethnic families by locating ethnic groups within particular social classes, although he recognised his failure to consider sex-related differences as a major restriction of his results. Finally, Jakubowicz and Wolf[35] in a study of parental views of schooling identified different responses from parents from the same ethnic group - highlighting the necessity of being cautious of approaches which pool data about members of similar ethnic groups into one set of generalisations.

If comparative researchers are to make any input into clarifying our understanding of the processes associated with the education of children from minority groups then we require more sophisticated models than those currently available. Schermerhorn's typology[36] for example goes some way towards refining our understanding by proposing that the interaction of an ethnic group to its environing society will depend on the manner with which the majority group in society responds to the decisions made by minority groups to retain aspects of their cultural heritage. The research reported above suggests that the satisfaction of an ethnic group's model tendencies may vary within that group, depending on such factors as sex and social class. The relationship between members of a subordinate group to the dominant mainstream culture may in fact be an interaction between the individual's sex and culture with the mainstream culture. These may be a two-order interaction: a first order interaction between sex and culture which may depend upon the values of that culture, and secondly, an interaction between the culture of the individual (the result of the sex by culture interaction) with that of the mainstream culture. If these are the processes involved, then we require a model of formal cultural transmission that can incorporate diverse social and cultural variables. At the same time, educational researchers must be prepared to test such theoretical propositions by the sensitive use of appropriate methodologies, be they positivist or descriptive.

FOOTNOTES

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